

LOW RESISTANCE AND RELIABLE COPPER INTERCONNECTS BY VARIABLE DOPING

ABSTRACT

[0031] A method and system is provided for efficiently varying the composition of the metal interconnects for a semiconductor device. A metal interconnect according to the present disclosure has an intermediate layer on a dielectric material, the intermediate layer having a relatively higher concentration of an impurity metal along with a primary metal, the impurity metal having a lower reduction potential than the primary metal. The metal interconnect has a main layer of the metal alloy interconnect on top of the intermediate layer and surrounded by the intermediate layer, the main layer having a relatively higher concentration of the primary metal than the intermediate layer, wherein the intermediate and main layers of the metal alloy interconnect each maintains a material uniformity.